CHAPTER V

The Patent Survey

Field Work

5-1 Preliminary: The first step in the field work should be an examination of the property with the claimant or his representative, unless such an examination was made prior to contracting for the survey. A sufficient number of claim corners should be visited to determine the material used, their condition, manner of marking, etc. In the course of such an examination, the claimant should point out known section corners, location monuments and triangulation stations, both of the U.S. Geological Survey and the National Geodetic Survey. The claimant may also be able to identify corners of adjoining and conflicting surveys and locations. If the property is extensive, the claimant may have established his own triangulation network and coordinate system, and if so, it should be incorporated into the survey, although not necessarily made a part of the official record.

All the discovery workings should be visited, the discovery points and discovery monuments pointed out. Other workings should be visited and the safety of old underground workings discussed. Maps of underground workings may be available. Workings constructed by third parties should also be identified.

Relations with landowners and other claimants in the area may be established with the help of the claimant. In addition to gaining access to the property and to their property for the purpose of executing the survey, they may have helpful information as to the location of section corners and the origin of fences.

If access is refused, it may be necessary to obtain help from the U.S. Marshall, but if properly handled in advance of the field work, the necessary permission will usually be granted. The fact may be stressed that you are a government official and that your work will be impartial. Emphasize that as a qualified surveyor, you are bound to protect all valid interests, property rights, and evidence.

Copies of the claimant's maps of the property showing the claim boundaries, discovery and other workings and access roads should be obtained from the claimant. The claimant may also have aerial photos which will be helpful in planning the survey.

Descriptions of all triangulation stations should be obtained. The plat and field note record of all prior mineral surveys in conflict or adjoining, as well as a copy of the connected sheet should be ordered, if not previously furnished with the survey order. The county records pertaining to surveys and particularly the restoration of section corners should be searched. The county surveyor may be helpful.

If the field examination reveals that there are insufficient location corners on the ground to identify the claims, an amended location survey with the resulting amended location certificates and request for an amended order for survey will be necessary.

5-2 Survey Methods: The preliminary field examination will suggest the best method of survey. This will be dictated largely by the nature of the terrain and the amount of timber and brush. Modern methods employing theodolites and electronic distance measuring equipment should be used. Regardless of the method used, the work must be sufficiently checked to assure that errors will be avoided. Most errors occur when adjusting corners to their final position.

EXECUTING A MINERAL PATENT SURVEY
(Transit and Tape Method)

5-3 Executing the Survey: The survey is usually initiated by retracing the boundaries of the location, or tying-in the corners, along with the discovery monuments and discovery points. Readily identified corners of conflicting surveys and section corners should also be tied in. The relative positions of the corners and discovery points are then determined by calculated bearings and distances. If the boundaries are within the statutory length and width (1500 x 600 ft.), the end lines are parallel and the sidelines are within 300 feet on either side of the discovery point, the survey may proceed.

If only small corner moves of a foot or so will make the claim conform, an amendment is hardly necessary; otherwise, the corners should be moved and amended location certificates filed.

A single claim may be surveyed within the location boundaries, without amendment, as long as the above conditions are met.

New discoveries may be necessary, but if intervening rights are suspected, it is better to hold to the original discovery points and stake fractional claims as required.

If the deposit is a blanket vein or massive deposit, the discovery may be anywhere within the claim, except in Wyoming where State law requires that the side lines be equidistant from the discovery.

If no public land survey corners or location monuments (or other horizontal control stations) can be found within two miles of the survey it will be necessary to establish a location monument. The requirements are given in Sections 10-32, 33 and 34 of the Manual of Surveying Instructions. There was a period when these monuments were called "Mineral Monuments" and were designated "U.S.M.M."

Conflicts with prior mineral surveys must be determined. It is necessary to search for each corner controlling a line in conflict. One corner is insufficient if others can be found. If the necessary corners cannot be found the boundaries shall be reestablished (not remonumented since the property belongs to another party) in accordance with the methods set forth in Chapter VI.

Conflicts with unsurveyed locations are not to be shown unless it is the wish of the claimant to exclude them from his patent. If they are prior locations, it may be well to do this in order to avoid an adverse suit. Conflicts with unsurveyed locations owned by the claimant and not a part of the survey need not be shown and excluded unless the area of conflict contains the discovery of the unsurveyed location. In cases where two claims of the survey are in conflict, the discovery of each claim may not be within the area of conflict. If so, an amended location is necessary to show a new discovery for one of the claims, outside the area of conflict.

If fee lands with mineral rights are in conflict, a subdivision of the section(s) may be necessary. This will depend on the wishes of the claimant and the Bureau of Land Management. An extensive resurvey that would place a hardship on the claimant should not be required. If a subdivision can readily be accomplished, it should be done.

It is not necessary to fix the boundaries of stock-raising homesteads since the minerals are reserved to the United States and belong to the mining claim in areas of conflict.

Special surveys such as townsites, Homestead Entry Surveys, U.S. Surveys and Coal Surveys in Alaska are treated as are prior mineral surveys. Rights-of-way should not be shown as the minerals are reserved, and when the right-of-way is abandoned, the surface reverts to the mining claim. In Alaska, native graves must be tied-in. Cemeteries should be shown.

Figure 5 shows Sur. Nos. 1234 A lode and 1235 B lode in conflict with the XYZ lode that is being surveyed for patent. Cors. Nos. 1 and 4 of Sur. No. 1234 A lode control the line of conflict with that claim. If they can be found, no further search is necessary; if they cannot, the search must be continued for Cors. Nos. 2 and 3. In the case of Sur. No. 1235, all four corners are required to be found in order to properly show the conflict.

Figure 6 shows the ABC and XYZ lodes, both of which are being surveyed for patent under the same survey order. The discovery shafts of both claims are in the area of conflict. In order to validate the claims, a new discovery must be shown for one of them, outside the conflict. It need not be the later claim as the owner has the right to decide which claim shall exclude the conflict.

If amended location certificates are filed for record, it will be necessary to make an amended application for survey to the Bureau of Land Management based on the amended certificates, and receive an amended order for

MINERAL PATENT SURVEY CORNERS

Top: a copper coated steel pin with brass cap. The location monument is set along-side.

Bottom: a stone corner chiseled with the corner number, the initial of the claim and the survey number.

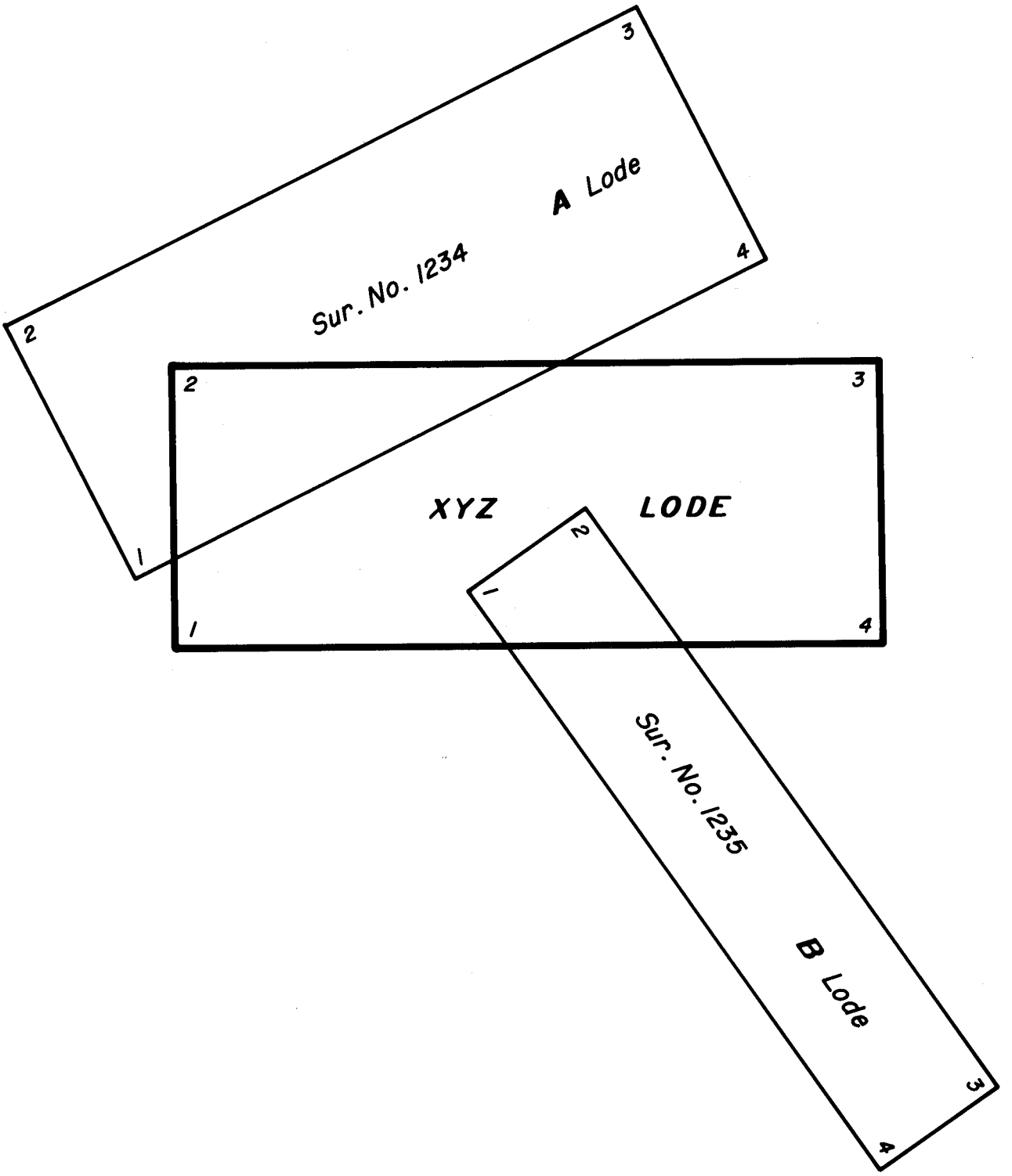


FIG. 5

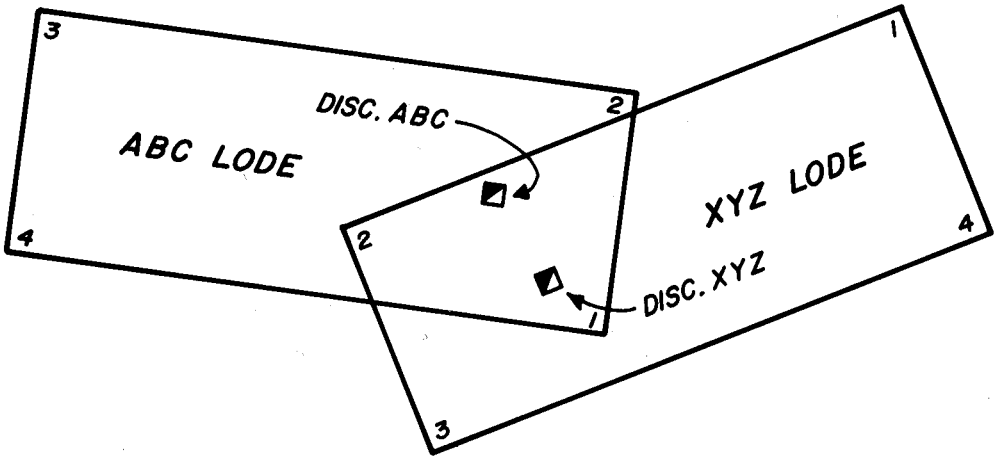


FIG. 6

survey. It will not be necessary to suspend field work pending such amendment, but it is advisable to refrain from marking the corners and accessories with the survey number until the amended order is received.

5-4 Monumenting the Survey: Section 10-35 of the Manual of Surveying Instructions, 1973 lists corner monuments in their order of preference.

Accessories to the corner generally consist of bearing trees or bearing rocks. If trees are available, two different species at approximately right angles from each other to the corner should, if possible, be selected and marked differently so that each can be readily identified. For example: one might be a Douglas Fir, 10 inches diameter, bears N. 10° E., 20.65 feet dist., blazed and scribed 1 W—2826 X BT; the other a Ponderosa Pine, 7 inches diameter, bears S. 70° E., 12.52 feet dist., blazed and marked X BT. In each case the measurement should be taken to the X which is in contrast to the bearing trees to section corners, the measurement being taken to the center of the trees. If the measurement is to the center of the tree, an X should not be included in the markings.

The difference between a pine, spruce and fir can be identified by the needles, the pine having needles in bundles, the spruce having needles square in cross section, and the fir having flat needles.

Bearing rocks should be marked X B O or X B R with the measurement taken to the X; the rock or outcrop being of sufficient size to be readily identifiable.

Ties along claim boundaries to items of planimetry and drainage surrounding the corner may be taken at this time. Ties to section corners, location monuments and triangulation stations may also be made at this time if they are close to a corner.

There is no objection to monumenting corners that fall on patented land. If they fall in a cultivated field they should be buried at least one foot in the ground. If the landowner objects, a witness corner may be set. Witness corners should also be set if the corner falls at an inaccessible point (see Section 4-17 of the Manual of Surveying Instructions). If the corner falls in a road, it is advisable to bury the corner at the true point and set reference monuments at equal distances on either side of the road (see Section 4-16 of the Manual of Surveying Instructions).

Location posts, such as a 4×4 post in good condition, may be set alongside the patent survey corners as a guard post and to aid in calling attention to it.

In selecting corner numbers, there is no rule other than Cor. No. 1 should be the corner from which the tie is given to the section corner or location monument. When surveying a block of claims common corners should be given the same number thereby reducing the number of section corner ties required from Cor. No. 1. This facilitates field note writing as well as platting.

5-5 Improvements: All improvements made by the claimant or his grantors are to be tied to a corner of the survey, measured, and a value placed thereon if they are such as to count toward the $500 patent expenditure. If they are to count as patent expenditure, they must be in the nature of actual mining improvements, such as cuts, tunnels, shafts, drill holes, etc.; in other words, an improvement that tends to develop or explore the mineral deposit.

Improvements such as cabins, ore bins, roads, bridges, etc., do not develop the claim, but should be tied in, measured and included under "OTHER IMPROVEMENTS" in the field notes, without a value.

Work done by third parties must also be tied-in and listed under "OTHER IMPROVEMENTS." If the claimant to such work is unknown, that fact should be stated. Again, no value is to be placed on these improvements.

The value to be placed on small improvements can readily be ascertained by multiplying the local wage or cost of equipment and operator by the length of time required to do the work. Drill holes may be valued at the cost of drilling, plus the cost of surveying, geologic evaluation and assaying. Larger improvements may not be as easy to estimate, and it may be necessary to go to the claimant's cost records in order to place a reasonable value on them.

Common improvements require special consideration. See Sections 10-55, 10-56, and 10-57 of the Manual of Surveying Instructions. A common improvement is one that tends to benefit several claims of a common group. It must have been constructed in its entirety subsequent to the location of each claim of the group, or at least $500 must have been spent on the improvement subsequent to the location of

OPEN PIT MINES

AN ACCESS ROAD IN RUGGED AREA. SUCH ROADS DO NOT AS A RULE COUNT TOWARD PATENT EXPENDITURE.

AN ADIT (TUNNEL) LEADING TO EXTENSIVE UNDERGROUND WORKINGS

each claim of the common group. All claims within range of benefit must be included, even though they were previously surveyed, or if they are locations which are not included in the survey. The field notes must recite all the claims involved, whether previously surveyed or unsurveyed.

Improvements need not be surveyed with the same accuracy as the claim boundaries. Stadia measurements are acceptable, although they should be made with a Philadelphia Rod and distances kept under 500 feet. Small workings may be measured with a Brunton Compass and steel tape, but some point of the working, such as the mouth of a tunnel or cut, must be tied to a corner of the survey using a transit.

Surveys of extensive underground workings may be taken from the claimant's records if such surveys were executed under the supervision of a mining engineer.

Extreme care should be exercised in entering old workings. In addition to unsafe timbering, they may be poorly ventilated resulting in bad air that could be fatal. Rather than risk an accident, the extent of such workings can be estimated from the size of the dump.

Ties to discovery workings require special mention in view of the directive from the Assistant Director of Technical Services, Washington, D.C., dated March 15, 1978.

Normally the discovery working is on the lode or intersects it and a tie is given along the lode line to the point of discovery, such as the face of the discovery cut, the mouth of the discovery tunnel, the center of the discovery shaft, etc.

However, in the case of blanket veins that are essentially horizontal a presumed lode line or center line need not be shown, and the discovery working may be anywhere on the claim. In such cases, the tie may be given from the nearest corner of the survey and included in the description of that corner, or a right angle tie may be given from a point on the nearest end line.

Where a discovery has been made by a hole drilled on an angle, a bearing and distance will be given from the collar of the drill hole to the point where it intersects the orebody, the collar of the hole will in turn be tied to the section corner or location monument. The description of the hole will necessarily include the verticle angle and the slope distance. This does not apply to Wyoming where State law requires that the discovery be on the center line.

5-6 Placer Claims: Placer claims that do not conform to the legal subdivisions of the public land survey will require a patent survey. When such claims are on unsurveyed land they should be conformed as nearly as possible to the protracted survey.

If the claims consist of a gulch placer they must be contained within the required number of 40 acre tracts according to the number of locators.

Metes and bounds placers are also permissible where conflicts with other mining claims would result if a description by legal subdivisions was used. In such cases, the placer claim must be surveyed around existing claims, so that no conflict exists.

The field notes of a placer claim must also contain a descriptive report as called for in the Code of Federal Regulations, 3863.1-3(c). The information required in the descriptive report was omitted from the 1973 Manual of Surveying Instructions but was contained in the 1947 manual as follows:

> "The mineral surveyor is required to make a full examination of all placer claims at the time of survey . . . and to file with his field notes a descriptive report . . . duly corroborated by one or more disinterested persons and covering the following items:
>
> (a) The quality and composition of the soil, the kind and amount of timber and other vegetation;
>
> (b) The location and size of streams, and such other matter as may appear upon the surface of the claims;
>
> (c) The character, extent, and position of all surface and underground workings for mining purposes;
>
> (d) The proximity of centers of trade or residence;
>
> (e) The proximity of well-known systems of lode deposits or of individual lodes;
>
> (f) The use or adaptability of the claim for placer mining, including the availability of water in sufficient

A URANIUM MILL

A URANIUM TAILINGS OR EVAPORATION POND

quantity for practical operations;

(g) Works or expenditures made by the claimant or his grantors for the development of the claim; and,

(h) The true position of all known mines, salt licks and salt springs, and mill sites. When none is known to exist on the claim, the fact will be so stated."

5-7 Mill Sites: Modern day mining and milling require sizable areas for waste storage, tailings and evaporation ponds. Camp sites, including schools, may be required for personnel employed at the mine or mill. Such areas are properly taken as mill sites and a large number may be required. They may be taken by legal subdivisions but often are surveyed, either with lode or placer claims or separately. If they are included in a survey with lodes or placers the survey number includes the letter "B", while the other claims are designated "A".

A mill site is not a valid location until it is put in use; therefore, all improvements and projected improvements should be shown. If the ground is to be used for a tailings or evaporation pond, the dam should be shown with its ultimate height and the high water line of the pond delineated by the survey.

It is also important to demonstrate the nonmineral character of the land. In the case of adjoining blanket deposits such as uranium, a few scattered drill holes will show the absence of a mineral deposit.

Office Work

5-8 Calculation: The first step will be to reduce coordinate positions to direct ties, starting with the section corner ties, followed by short ties between claims of the survey should these claims actually overlap. In selecting the corners to tie, the tie between corners should be given that will facilitate the calculation of intersections and areas by solving triangles.

As illustrated by Figure 6, claims ABC and XYZ are in the same survey. A tie should be given from Cor. No. 1 of claim ABC to Cor. No. 2 of claim XYZ; not between Corners 1 and 3. After these ties have been calculated, they should be checked by calculating closures using the various short ties and section corner ties.

In selecting corners of conflicting surveys to give tie to, the corner within the survey as illustrated in Figure 5 should be selected. The tie to Sur. No. 1235 B lode should be to Cor. No. 1 from Cor. No. 1 of the XYZ lode, or to Cor. No. 2 from Cor. No. 4.

Lines of prior mineral surveys between recovered corners should be reported as correct or substantially correct as approved. If found in error the correct bearing and distance should be given.

In Figure 5, if Cors. Nos. 1, 2 and 4 of Sur. No. 1235 B lode were recovered, lines 1-2 and 4-1 should be reported. Lines 2-3 and 3-4 cannot be reported since Cor. No. 3 was not found. If the tie from Cor. No. 1 is to the same section corner as used in the survey of claim XYZ, then the correctness of the tie should be reported. If Cor. No. 1 was not recovered, the section corner tie cannot be reported.

The position of missing corners should be fixed in accordance with Chapter VI. The remaining lines can then be reported as fixed by the selected method of restoration.

Intersections and areas of conflict should then be calculated by solving triangles. Areas may be calculated using double meridian distances, but intersections should never be calculated by forcing a closure. Intersections may be checked by closure.

A special situation exists where a former survey excluded an unsurveyed location from the patent and the unsurveyed location has subsequently been abandoned. This area is designated as a tract and its boundaries are determined from the prior survey. See Tract A of the Jim Dandy Lode described in the specimen field notes and plat of the Manual of Surveying Instructions.

Another use of a tract is for the purpose of excluding a small area surrounding the discovery of another location not embraced in the survey.

Intersections and areas of conflict with patented lands containing mineral rights must also be calculated.

Supporting calculation sheets need not be furnished the Bureau of Land Management but computer tapes, if available, will be helpful. The BLM can perform the necessary checks by computer.

5-9 Preliminary Plat: The mineral surveyor will find it advantageous to prepare preliminary plats prior to writing the field notes. One plat should provide the base and give all the details of the survey with items of topography and culture secondary. This plat may be prepared in

pencil or ink at the option of the mineral surveyor. It should be such that legible blue lines copies can be furnished to the Bureau of Land Management along with the notes, and to the claimant. It should clearly state that it is a PRELIMINARY PLAT SUBJECT TO CORRECTION. Some offices of the Bureau of Land Management may request a reproducible copy.

Plats on linen are no longer required. A secondary plat showing the topography and culture in detail will be an aid in writing field notes, but is not required by the BLM.

If drill holes are part of the improvements and are too numerous to show on the base plat, a separate plat is advisable.

5-10 Field Notes: A detailed set of specimen field notes is contained in the Manual of Surveying Instructions which should be followed for form and content. There are, however, some inconsistencies: The title page shown in the manual should not be used. Use current Form 3400-11, as supplied by the Bureau of Land Management.

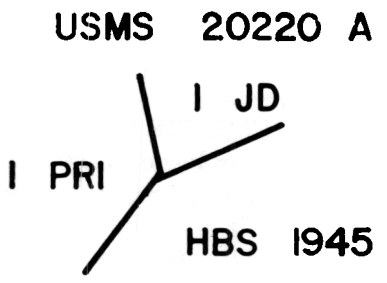
The locations should be listed in the same order that they are described in the field notes, thereby serving as an index.

The field notes begin with a description of instruments and the mean results of the solar or other azimuthal observations. The latitude and longitude of the observing station is given. If this is not at a corner of the survey, the latitude and longitude of the first corner described should be given, thus:

> At Cor. No. 1 of the Jim Dandy lode, identical with Cor. No. 1 of the Prince Lode of this survey, in latitude 38°45′ N, and longitude 106°20′ W.

A description of the measuring devices follows the observation for azimuth. If an electronic distance measuring device is used, the name and serial number should be given. It should also be stated that it was tested by measuring a known distance before and after the survey, and found correct.

Corner markings as shown are acceptable for stone monuments or wood posts. When a monument with a cap is used, the following marks would be more suitable:



The X has been omitted from the inscription on bearing trees which is incorrect, unless the measurement was taken to the center of the tree. It should be included, thus: JD-1-20220A XBT or JD-1-PRI-1-20220A XBT if the full complement of marks are shown.

When giving intersections only the distance to the line being intersected is given for claims of the survey as the distance to the corner on the line being intersected will be given later in the notes when that claim is described.

When the intersection is with a prior mineral survey or unsurveyed location, the distance should be given to a corner within the claim, or the same corner each time the line is intersected. See the intersection of lines 2-3 and 3-4 of the Protector lode with Sur. No. 20100 Silver lode.

Note that intersections are given to the nearest hundredth of a foot, while distances to items of topography and culture are to the nearest foot. Distances given in ties including bearing objects should be to the hundredth of a foot.

The area statement should show all conflicts and be so arranged that any exclusion may be made and the net area to be patented readily obtainable. This can best be done by starting with the oldest survey and progressing through the various conflicts, but this may not hold true if a prior survey has not been patented. A copy of the preliminary plat may be used to color the exclusions and make certain that all have been properly stated.

Under the heading "LOCATION" it is important to state that the survey is identical with the location as marked on the ground or to state the differences. When describing corners, ties should be given to location monuments when

they are not identical. See the Prince Lode in the specimen notes.

Only those improvements counting toward the $500 expenditure are to be given under the heading "IMPROVEMENTS." In such case, the discovery working should be numbered one. If there is no discovery working, but a discovery point is called for, it may be described and labeled No. 1. Any improvements that do not count toward the patent expenditure or those that have been made by others should be listed under "OTHER IMPROVEMENTS."

"OTHER CORNER DESCRIPTIONS AND SUPPLEMENTAL DATA" is a very important part of the notes since it contains the report on prior surveys. Do not report another mineral surveyor in error for minor discrepancies in bearings and distances. The phrase, "substantially correct as approved" may be used, or "approximately correct as approved."

Under "MEMORANDUM" differences with the calls given in the location certificate may be explained, as well as typographical errors in the certificate.

Because of corrections that may be required by the Bureau of Land Management it is well to prepare a preliminary draft of the notes for submitting to the BLM. The final typing, in triplicate, can be accomplished after all differences have been resolved.

5-11 The field notes and preliminary plat should be sent to the State Office of the Bureau of Land Management by either certified or registered mail with a return receipt requested. A copy of the preliminary plat may also be sent to the claimant with a copy of the letter of transmittal to the BLM.

As a rule, the returns of mineral survey should remain confidential until the survey is approved. The mineral surveyor should maintain this confidence. If a demand is made of the Bureau of Land Management under the Freedom of Information Act, then the preliminary nature of the work should be clearly stated to the recipient.

Processing the Survey

5-12 Preliminary Examination of Field Notes: The examination of the survey may begin by reading the notes and comparing them with the preliminary plat. As a general rule the mineral surveyor will write the notes from the plat. If inconsistencies appear, they will usually be typographical errors in the notes. However, this must be verified by the mineral surveyor.

Particular attention should be given to the format as shown by the specimen notes of the Manual of Surveying Instructions, 1973.

Corner descriptions must be proper and adequate. Ties should agree with the preliminary plat. Discovery points must be on public domain.

By posting the mineral survey to the connecting sheet or similar plat with a pencil, conflicts and other surveys within 100 feet may be determined.

The names of the locations must agree with those given in the location certificates. End lines must be parallel and the statutory length and width cannot be exceeded. Improvements should be fairly valued; the discovery point should agree with that given in the location certificate; common improvements should be correctly described and all claims benefiting therefrom should share equally. The geographic position of one corner of the survey must be given. Under "LOCATION" the correct section, township and range should be given.

It should be stated that the survey is identical with the location as marked on the ground. If not identical, it should be so stated, and ties to location monuments must be given.

The section corner tie may not exceed two miles from the nearest corner of the survey. Intersections with the lode lines and distances along the lode line to the discovery point must be given. (Exception: bedded deposits.) The bearing of the lode line, if different from the side lines, must be shown on the plat.

Reports on former surveys should be checked against the notes of these surveys. The bearings and distances of lines of former surveys that are wholly within the survey or a claim of the survey must be given.

The area statement should be reviewed to make certain that conflicts are given in chronological order and that any exclusion or combination of exclusions can be ascertained.

The magnetic declination must be given. The beginning and completion dates of the survey must be given. The survey cannot begin prior to the date of order.

5-13 Calculations: Calculations may begin by computing the solar observation; the declination should be verified, also the latitude and longitude. The survey should close. Lode claims should have a perfect closure; irregular claims

such as placers should close within 0.5 feet in 1,000 feet. The statutory length and width of lode claims may not be exceeded. The width at right angles to the lode cannot exceed 300 feet on either side. The section corner ties within the survey may be checked by closure, using short ties between claims of the survey; each section tie and short tie should be used in at least one closure. The closures should not exceed 0.5 feet in 1,000 feet. (It may be necessary to report the longer section ties to an even number of seconds such as 15".)

The section corner ties should be checked against those given in conflicting surveys using the short ties given to these claims along with the reported boundaries. Such closures, depending on the length of the ties, should not exceed 10 feet. If they do exceed this distance, the correct tie should be given under "OTHER CORNER DESCRIPTIONS AND SUPPLEMENTAL DATA" provided that the corner from which the tie was made was recovered. If the corner was not found, the error cannot be reported. The same applies to short ties between conflicting surveys, but the allowable error should be within the 1:2000 limit. If more than one section corner is tied, the bearing and distance along the section line should be checked, reporting any appreciable difference under "OTHER CORNER DESCRIPTIONS AND SUPPLEMENTAL DATA."

The bearings and distances of intersections with lines of prior surveys should be correctly stated. This may be verified by closure, but if a closure of 1:2000 is not obtained, it will be necessary to calculate the intersections by solving triangles, to determine where the error lies. Such intersections should check with 0.2 feet.

From the intersections obtained, the areas of conflict should next be calculated. If the final plat is drawn at a scale of 1" = 200', conflicts with a conflict, i.e. double conflicts, may be checked by dividing the area of conflict into triangles and scaling the base and altitude. The mineral surveyor, however, must actually calculate these areas. All areas should check within 0.02 acres.

5-14 Platting Procedures: The lines of the survey are shown heavier than those of former surveys so that the locations of the survey will stand out.

All corners recovered or set are shown with a circle to distinguish them from corners not found.

The lode line is shown as a broken line and if parallel to the side lines, only the distance each way from the discovery point is shown; if not parallel, then the bearing must also be shown. The bearings and total distances of the lines of the survey are shown heavier than those of conflicting surveys and intersections along such lines.

The names of the locations of the survey shall be shown in vertical capital letters and be larger and heavier than those of conflicting surveys, which shall be shown in upper and lower case.

Distances to intersections along the line of survey should be shown before the intersection. Intersections with lines of prior surveys are given preference over topographic items. Where space will not permit the showing of a distance, it may be placed above a prior distance, with the first distance shown next to the line.

Bearings of conflicting surveys are usually shown in the direction of the line between corners as surveyed; i.e., from corner 1 to corner 2, etc. Bearings and distances in all cases should be shown along the line they pertain to. Bearings of ties should be shown in the direction from the corner from which the tie was made. Ties will be shown with light broken lines. If there is not room to place the bearing and distance next to the line, it may be placed on an arrow.

All bearings and distances shall be in slant lettering. Witness corners are shown with a circle and labeled W.C. Cor. No. ___ , provided they are on a line of the survey. If not on line they are shown with a tie.

Surveyed section lines and surveyed subdivision of section lines are shown by solid lines; unsurveyed lines are shown with a broken line.

Designation of subdivisions, Township and Range should be vertical letters. The discovery workings and all other improvements are labeled; they may be numbered to agree with the field notes. It is not necessary to give a tie to the improvements, except a common improvement tunnel, shaft, etc.

The title block shown on the specimen plat in the Manual of Surveying Instructions should be closely followed. While the plat scale is usually 200 feet to an inch, it may be smaller to accommodate several claims, provided the necessary data can be shown. Where more than

one sheet is necessary, only the final sheet need have a title block. All sheets should carry the survey number and state that it is sheet No. ____ of ____ sheets.

When the plat is finished it should be compared with the field notes. This can be done by two people, one reading the notes and the other following the plat; or two people can independently do the comparing. If rough draft notes were submitted by the mineral surveyor, they should be returned to him with the corrections for final typing, and execution of the "Certificate of Surveyor," current Form 3860-7.

The final typing will consist of the original set on current Form 9180-21, which is bound on the left, with two *carbon* copies on current Form 9180-22, which is bound at the top; this may vary with state office practice. (Xerox or similar copies are not acceptable.)

5-15 Approval of Survey: The lower portion of current Form 3860-7, "Certificate of Surveyor," contains the certificate of approval to be signed by an officer of the Bureau of Land Management. This may be the State Director or he may delegate this authority to the Chief, Division or Branch of Cadastral Surveys, for that state. He should also sign the certificate of transcript for the two carbon copies.

Current Form 3860-8, certifying $500 expenditure, must also be executed by the above authorized officer and attached to the copy of the field notes that will be filed with the application for patent. If $500 has not been expended, it is the claimant's responsibility to complete the work and have the certificate executed and filed with the BLM Branch of Land and Minerals (land office) prior to the expiration of the period of publication.

If the survey has been properly executed and shows the facts, the State Director cannot refuse to approve the survey because he feels that the claim is invalid. (See 57 I.D. 63, Raymond E. Johnson, 1939.)

The original field notes and plat are then placed in the open files of the Bureau of Land Management. The location certificates are to be included with the notes. The two transcripts of the field notes together with two cloth backed copies, one of which has been waterproofed for posting, and a plain paper copy of the plat, will then be furnished the claimant. An additional copy for posting will be furnished if a mill site is included in the survey.

One set of the notes and one copy of the plat will be used to support the application for patent. Current Form 3860-4, is used to notify the State Branch of Land and Minerals and the Director, Bureau of Land Management, of the approval of the survey and includes a sketch of the survey. This form is also used to notify the Regional Forester if the survey is on a National Forest.

The mineral surveyor should be notified by letter of the approval of the survey and he should be furnished a paper copy of the plat and requested to examine it at his early convenience. (See appendix for copies of forms.)

Departures from the Normal Procedure

5-16 Cancellation of Surveys: A patented mineral survey may never be cancelled. An unpatented mineral survey may be cancelled only after the claim has been declared null and void or relinquished by the claimant; then it need not be cancelled until it is necessary to do so to accommodate an entry or administrative action. It can be cancelled only by the officer of the Bureau of Land Management authorized to approve mineral surveys.

In the past, claims could be declared null and void only after a successful contest had been brought against the claim. After October 21, 1979, claims must be recorded with the Bureau of Land Management within 90 days of the location date or they will automatically be deemed to have been abandoned and void.

The procedure is as follows: When the Chief, Branch of Cadastral Surveys of the State Office is notified that a claim has been declared null and void, a notation to that effect should be made on the plat of survey (or if the plat is in the archives, it may be made on the card index). No further action is necessary at this time; the survey is not cancelled.

Cancellation becomes necessary if an entry or administrative action, including a survey or resurvey, involves the land embraced in the mineral survey. Current Form 3860-4, Approval of Mineral Survey, may be used to cancel the survey and to notify the Director of the Bureau of Land Management and any other interested parties substituting the word "cancelled" or "cancellation" for approval or it may be by memorandum.

Should a supplemental plat be required to lot the area embraced in the survey, a certified set of the field notes of the survey and the mineral

survey plat should accompany the plat to Washington, as they do not have the field notes of unpatented mineral surveys. The field notes of the cancelled survey becomes the basis for the new lot designation. The Director's memoranda of July 14, 1958 and November 17, 1960, cover the subject.

5-17 Unapproved Survey: Occasionally an order for survey will be cancelled and it is not known how far the mineral surveyor has proceeded with the field work and what corners have been set and marked. In no case should the corners be removed as they still serve as corners of the location which may be perfectly valid. The survey number should not be re-used inasmuch as it will serve to identify the corners on the ground.

5-18 Additional Notes and Certificate on Plat: In the past, additional notes were sometimes prepared from the existing record along with amendment to the plat in red ink and accompanying certificate when there was an omission of a conflict with an agricultural or other patent, a pending entry or an adverse claim.

For example: A survey was approved without showing the conflict with a legal subdivision that had been included in a preemption homestead. The subdivision was protracted on the mineral survey plat from the township survey, based on the section corner tie given in the mineral survey, intersections given with the boundaries of the subdivision, and an area of conflict calculated. All plats were recalled for the amendment. The additional notes were written, in triplicate, by the cadastral surveyor, to show only the lines of the mineral survey involved in the conflict, giving the intersections. The area statement was rewritten to the extent necessary to show the area of conflict.

The same procedure was followed if an adverse claim was to be excluded on the basis of the description in its location certificate. Red ink was used on the plats to distinguish the amendment, but black ink was used if the certificate specifically stated the extent of the amendment.

Most offices now resolve the above situations solely through a memorandum process.

5-19 Amended Surveys and Amended Plats: This is occasioned by an error in the original survey that is not discovered until after the survey is approved, or for the same reasons listed in 5-18 above, where the amendment cannot be made from the existing record and additional field work is required. The claimant may also request an amended survey. The claimant bears the cost. Example: In Survey No. 19202A-Am. Colorado, the wrong claim was included in the survey. The correct claim was included in the amended survey which covered the same ground.

5-20 A new survey is required if the claim boundaries are changed by amendment after the original survey is approved. Section 10-62, page 226 of the Manual of Surveying Instructions states: "An amended survey must be made in strict conformity with, or be embraced within the lines of the original survey." A new survey is also required where the claim has been abandoned and relocated by another.

5-21 Expenditure of $500 After the Survey is Approved: Supplemental notes based on a supplemental order for survey, either to the original mineral surveyor or another mineral surveyor, must be submitted and attached to the original field notes. The supplemental notes must contain a full description of all improvements. If the additional expenditure applies only to one claim of a group, only the expenditures of that claim need to be recited. Current Form 3860-8, Certificate of Expenditures, must be executed and attached to the claimant's copy of the notes for filing with the patent application.

5-22 If patent is applied for long after the survey was approved, a statement from the Chief, Branch of Cadastral Survey, will be required by the Branch of Land and Minerals to the effect that the plat correctly shows all conflicts, or listing the later surveys with which a conflict exists.

If later surveys did not exclude the survey in question, the plat will be returned by the Branch of Land and Minerals for amendment, and amended notes will have to be written. If the applicant is not the same as the claimant shown at the time of the survey, he is entitled to use the survey provided he can show a chain of title. If he does not have the necessary plats and notes, the Branch of Cadastral Survey will supply him with the necessary copies. The claimant bears all costs.

5-23 Occasions have arisen where a claim or survey excluded from the patent is later abandoned. A supplemental application for patent

may be made for the excluded ground. The procedure to be followed is the same as given in 5-22 above. Copies of the plats, including those for posting and the notes must be furnished the applicant.

5-24 Patent Applied for in Two Parts: When only a part of the claims of a survey are applied for and patented, and later application for patent is made for the remaining claims, a copy of the plat, or if the plat is in more than one sheet, the sheets showing the claim, must be posted, and a copy, together with a transcript of that portion of the field notes pertaining to the claims, filed with the Branch of Lands and Minerals at the time the supplemental application for patent is made. If not all sheets of the plat are used, be sure that the ones used show all ties and pertinent information.